interested Tribes continued involvement and input as to the potential impacts and mitigation associated with cultural resources and traditional cultural properties.

3.3 SEA'S FINAL RECOMMENDATIONS

In developing its final recommendations, SEA has taken into consideration the entire range of impacts associated with the Extension Alternatives and the No-Action Alternative. This has presented a complex and complicated task due to the expansive nature of the project, including two states with differing physical characteristics (such as types of wildlife, vegetation, land use, among others), and the variety of resources potentially significantly impacted.

SEA received hundreds of comments on the potential environmental impacts and SEA's conclusions presented in the Draft EIS. Generally, these comments apply to a particular part of the project, for instance the portion in Wyoming or South Dakota. Additionally, many comments, particularly those from state and local agencies, targeted specific resources for which these agencies have management or regulatory responsibility. Ultimately, however, it is SEA's responsibility to evaluate, review, and consider **all** of the impacts to **all** the resources along **all** of the alternatives and develop a **single** recommended alternative.

In this case, each Extension Alternative would have impacts on the environment. Additionally, no one alternative would have the least impact on all the resources evaluated. Also, impacts within a resource category may differ for each alternative. For example, one alternative may have greater impacts on big game but lesser impacts on sage grouse leks, both impacts to wildlife and both important considerations. Such a situation requires SEA to weigh the degree of the environmental impact of each Alternative, viewed as a whole, and the extent to which the impacts are capable of being effectively mitigated.

After careful and thorough consideration of all the available information on alternatives, SEA has developed recommendations for the proposed project. These recommendations address each of the components associated with extending DM&E's existing rail line into the PRB, including:

- overall rail line extension - Alternatives B or C versus the no-action alternative (Alternative A)[47]

[47] SEA also analyzed an existing transportation corridor alternative (Alternative D) in the Draft EIS. However, as discussed above, Alternative D (and a Modified D Alternative) have since been determined unreasonable and have been eliminated from further consideration.

- alternative route variations for the Spring Creek area - Spring Creek and Phiney Flat Segments
- alternative route variations for the Hay Canyon area - Oral, Hay Canyon, and WG Divide Segments
- mine loop route variations - North Antelope (East and West Loops) and Black Thunder (North and South Loops)

SEA's specific recommendations and its rationale are presented in the following sections.

3.3.1 THE ALTERNATIVES CONSIDERED

In the Draft EIS, SEA conducted extensive analysis of the reasonable and feasible alternatives for extending DM&E's existing rail system into the PRB. These alternatives included the No-Action alternative (Alternative A), DM&E's proposed action alternative (Alternative B), and the modified proposed action alternative (Alternative C) — designed to avoid some of the potential environmental impacts of Alternative B. SEA concluded in the Draft EIS, that although Alternative A would not result in many of the potential impacts of the action alternatives, it nevertheless would have the potential to result in significant impacts to safety and rail service. Additionally, Alternative A would not meet the stated purpose and need for the project, to allow DM&E to generate the necessary revenues to rehabilitate its existing rail line and provide a third competitive and efficient rail carrier access to the PRB. SEA reaffirms here its conclusions in the Draft EIS regarding Alternative A. Therefore, the remaining issue for SEA regarding the proposed new rail line is which action alternative, Alternative B or C, would be environmentally preferable, should the Board decide to approve the project.

SEA determined in the Draft EIS that both Alternatives B and C would have potentially significant environmental consequences to land use, geologic hazards, soils, paleontological resources, water resources, wetlands, air quality, vegetation, cultural resources, and aesthetics. Additionally, SEA determined that Alternative B could have significant impacts to threatened and endangered species. SEA also determined that, if the mitigation recommended in the Draft EIS were imposed and implemented, some of these impacts could be reduced, potentially below levels of significance, but that certain potentially significant adverse environmental impacts, particularly to land use, aesthetics, and cultural resources, would likely still result. Therefore, based on the information available when the Draft EIS was issued, SEA indicated that while it did not believe that either alternative could be viewed as environmentally preferable, Alternative C appeared to be the least environmentally intrusive Extension Alternative.

As noted above, SEA has conducted extensive additional analysis in a variety of resource areas in preparing this Final EIS. The following compares the Extension Alternatives based on each of the resources considered to potentially be significantly impacted by the proposed project, considering the information contained in the Draft EIS, additional analysis in the Final EIS, and SEA's final recommended mitigation.

3.3.1.1 Safety

Both Extension Alternatives would potentially result in significant impacts on safety, although the impacts of Alternative B would be slightly greater. However, DM&E has submitted a far-reaching grade crossing protection plan for Alternative C and SEA is recommending that the Board require DM&E to comply with it as part of any project approval. If SEA's recommended condition is imposed and implemented, the potential safety impacts of Alternative C would be effectively mitigated. DM&E has not submitted such a plan for Alternative B, but the same crossing protection plan submitted for Alternative C could generally be implemented for Alternative B, if the Board approved that Alternative. Therefore, with mitigation, SEA has determined neither Alternative B or C would have a significant impact on safety.

3.3.1.2 Geology

Potentially significant impacts regarding geology would result from the proposed new line because each of the Extension Alternatives would cross extensive areas of Pierre shale which could be unstable, resulting in landslides or slumping. Landslides or slumping would cause long-term maintenance problems and could jeopardize safe operation of the rail line. However, as noted above and in the Draft EIS, appropriate design and engineering measures exist to allow DM&E to identify the potential problem areas, address them, and reduce the likelihood of future problems. Alternative B, because of the numerous pinch-points along the Cheyenne River, would likely require more extensive measures to ensure stability and safety of the rail bed along that alignment. These additional measures would likely result in greater impacts to the Cheyenne River and soils on adjacent areas due to the increased earthwork required to construct a suitable rail bed at these locations.

3.3.1.3 Soils

Overall, the potential impacts from both Extension Alternatives would be similar and potentially significant. However, mitigation measures recommended in Chapter 12 of the Final EIS would serve to reduce soil losses and disturbance during construction. Both alternatives cross similar amounts of erodible soils, the impacts of which could also be addressed through

implementation of SEA's recommended mitigation. In short, impacts to soils, while potentially significant, would be similar between the two alternatives and could likely be mitigated to levels below significance.

3.3.1.4 Paleontological Resources

Both Extension Alternatives have the potential to have significant impacts on paleontological resources. Alternative C could potentially have a greater impact because it would affect slightly more areas with a Probable Fossil Yield Classification (PFYC) of 5, the level with the highest potential for these resources. However, while fossils occur in particular rock strata, they are not evenly distributed, but occur somewhat randomly. Therefore, it is possible that few, if any, fossil resources would be encountered in a high-probability area and for significant fossil resources to be encountered in a low-probability area. SEA is recommending mitigation to minimize the likelihood of potentially significant impacts.

3.3.1.5 Land Use

Both Extension Alternatives would have potentially significant impacts on agricultural lands, particularly ranchland and USFS lands. DM&E has developed a Land Use Mitigation Policy and Plan, and SEA has recommended that compliance with it be imposed as a condition of any project approval. Based on the plan and applicable laws that provide for landowner compensation, discussed previously in this Chapter, SEA believes that many of the impacts on landowners can be minimized.

Additionally, the USFS has prepared a mitigation plan (included as Attachment B to Chapter 12) designed to mitigate the impacts of Alternative C, the USFS identified preferred alternative, should the Board ultimately approve the project. Implementation of the USFS mitigation plan would serve to minimize the impacts of Alternative C to Federal lands. No such plan has been developed for Alternative B, and SEA believes it would be more difficult to mitigate the land use impacts of Alternative B. Alternative B would affect approximately 13.0 more miles of USFS land, including several RARE II and Roadless areas which are sensitive to encroachments such as a rail line. Additionally, it would be difficult to mitigate the potential impacts of a new rail line along the portion of the Cheyenne River the USFS considers eligible as a Wild and Scenic river.

3.3.1.6 Water Resources

Both Alternatives B and C would have potentially significant impacts to water resources, particularly the Cheyenne River. Alternative B would have substantially greater impacts to water resources due to crossing 20 perennial streams and 623 intermittent streams, compared to 14 perennial and 520 intermittent streams for Alternative C. Both Alternatives cross the Cheyenne River twice at locations where the river is listed as impaired. However, Alternative B would be within 500 feet of the Cheyenne River for 9.11 miles and contain several pinch-points which could result in significant impacts to the river. Alternative C, in contrast, would be within 500 feet of the Cheyenne River for only 4.98 miles and would have no pinch-points. Additionally, the impacts of Alternative C could be more effectively mitigated due to the absence of pinch-points. SEA therefore concludes that Alternative C would have the fewest effects on water resources and that the potential impacts could likely be reduced to insignificant levels with SEA's recommended mitigation.

3.3.1.7 Wetlands

Alternative B would impact approximately 90.8 acres of wetlands and Alternative C would impact approximately 93.9 acres of wetlands. Each Extension Alternative would have potentially significant impacts on wetlands. However, as part of the COE Section 404 permit process, DM&E would be required to develop mitigation for potential wetland impacts, and SEA is recommending that the Board impose a condition requiring that DM&E obtain and comply with its 404 permit, thereby minimizing or eliminating any potential loss of wetlands.

3.3.1.8 Air Quality

Neither of the Extension Alternatives would have an adverse impact on air quality, based on National Ambient Air Quality Standards and the Prevention of Significant Deterioration emissions increments for Class II airsheds, due to locomotive emissions of criteria pollutants. As such, the project would have no affect on the air attainment status of the project area.

SEA also evaluated the potential impacts of the Extension Alternatives upon visibility at Class I airsheds, including Badlands National Park. Both Alternatives B and C would have similar impacts to visibility, particularly at operation levels at and above 50 million tons of annual coal transport.

As part of this project, SEA has developed an air quality working group to study the impacts of the proposed project at Badlands National Park and other Class I airsheds and develop mitigation measures to minimize impacts to these visual resources. SEA has recommended, as part of any mitigation imposed by the Board should the project be approved, that DM&E comply with the recommendations of this working group. Additionally, SEA has included other recommended mitigation measures intended to minimize impacts to Class I airsheds.

3.3.1.9 Vegetation

Construction of either Alternative B or C would require that a substantial amount of vegetation be cleared, much of which would be converted to rail line right-of-way. Because revegetation measures could be implemented to reestablish vegetative cover, the potential effect of loss of vegetation could be mitigated. Therefore, this project likely would not result in significant adverse impacts for common vegetative communities found throughout the area, including grassland, coniferous forest, and sagebrush shrublands.

However, deciduous woodland and riparian vegetation are uncommon in the project area and provide valuable habitat for eagles and other raptors, wild turkey, deer, and elk. Based on comments from the USFWS and South Dakota Department of Game, Fish and Parks, it appears that loss of deciduous woodlands, particularly riparian woodlands, may be difficult to mitigate successfully. Both Extension Alternatives would convert deciduous woodlands to rail line right-of-way, approximately 24.2 acres for Alternative B and 33.9 acres for Alternative C. Although Alternative B would affect less overall deciduous habitat, it would affect more riparian areas because it is closer to the Cheyenne River for over 9 miles, compared to less than 5 for Alternative C. Therefore, it appears that Alternative B would have a somewhat greater impact on sensitive riparian vegetation than Alternative C.

SEA understands that the COE, USFWS, and South Dakota Department of Game, Fish and Parks are working toward development of a mitigation plan, as part of the COE permitting process, to minimize impacts to riparian habitats. SEA believes it is likely that significant adverse impacts to vegetation will be minimized as part of this process. Additionally, SEA has developed additional recommended mitigation measures to minimize impacts on vegetation resources.

3.3.1.10 Cultural Resources and Traditional Cultural Properties

Construction of either Extension Alternative is likely to result in significant adverse impacts on cultural resources and Traditional Cultural Properties. It is likely that significant archaeological sites will be discovered within the rail line alignment. In some cases, it may be

possible to re-align the rail line, but in other cases this will not be possible, and the site will require excavation. Other cultural resources sites will likely be inadvertently discovered during construction and some cultural material destroyed. Construction and operation of a rail line would conflict with the historic setting of many traditional cultural properties and would adversely affect their character.

Although procedures for identification, mitigation, and protection of cultural resources have been developed through coordination among SEA, interested Tribes, cooperating agencies, the Advisory Council on Historic Preservation, State Historic Preservation Offices, and DM&E, and incorporated into the Memorandum of Agreement, Programmatic Agreement, and Identification Plan developed for the project, adverse, and likely significant, impacts are expected to occur to cultural resources and Traditional Cultural Properties. Impacts to archaeological resources could be partially mitigated through excavation. However, excavation is considered an adverse impact under the National Historic Preservation Act and by the Tribes. Adverse impacts to Traditional Cultural Properties would be difficult to mitigate due to their being affected by noise and changes in the viewshed. Overall, SEA expects significant adverse impacts to these resources, regardless of which Extension Alternative may be selected.

3.3.1.11 Aesthetics

Both Alternative B and C would create a visual intrusion into the landscape. Train construction and operation would affect the current scenic character of the project area as well as the remoteness and feeling of vastness this undeveloped area currently provides. These impacts would be difficult to mitigate.

Because of the similarities in the route alignments for Alternative B and C, the impacts of the two alternatives on aesthetics would be generally the same. However, Alternative B would have greater impacts, as it involves new construction in more areas along the Cheyenne River considered eligible for classification as Wild and Scenic (and consequently potentially greater impacts on the eligibility of the Crazy Horse Scenic Byway), cross more National Grasslands with a visual quality objective (VQO) of partial retention (7.5 miles verses 5.1 miles for Alternative C), and runs along the scenic Cheyenne River valley for a greater distance than Alternative C (9.11 miles verses 4.98 miles).

3.3.1.12 Threatened and Endangered Species

Because of the similarity of the location and habitat types crossed by the two alternative alignments, potential impacts to threatened and endangered species would generally be similar for

Alternatives B and C. However, Alternative B would have potentially adverse impacts on the black-footed ferret by crossing a prairie dog-habitat area identified for reintroduction of this species into the wild. By contrast, Alternative C would avoid this area and likely have little, if any, impact on black-footed ferrets.

3.3.1.13 Summary

After considering all the available information, SEA has determined that Alternatives B and C would have basically the same impacts to safety, soils, paleontological resources, land use, wetlands, air quality, and cultural resources. Appropriate mitigation would reduce the significant impacts on safety, soils, land use, and wetlands to levels below significance. Even with SEA's recommended mitigation, however, significant impacts to cultural resources and Traditional Cultural Properties are likely. There also could be significant effects on paleontological resources and air quality (visibility at Class I airsheds) if the new line is constructed.

For the remaining resources potentially significantly impacted, including geology, water resources, vegetation, aesthetics, and threatened and endangered species, SEA has found differences in potential impacts, assuming that SEA's recommended mitigation is implemented. In each of these areas, Alternative C — which was developed to avoid a number of environmentally sensitive areas — would have less potentially significant effects than Alternative B. Alternative C would avoid steep slopes and pinch-points along the Cheyenne River, which could require extra earthwork to stabilize, placement of fill in the Cheyenne River, and relocation of the river channel. Additionally, Alternative C would be out of the Cheyenne River valley to a greater extent than Alternative B, which generally follows the river for the majority of its length, and would be within 500 feet of the river for over four miles less than Alternative B. By avoiding the Cheyenne River, impacts to the waters of the river and the riparian vegetation and habitat along the river would be reduced. Alternative C also would avoid potentially problematic geologic areas, and retain the eligibility of the Cheyenne River for Wild and Scenic classification. Finally, Alternative C would avoid the large prairie dog complex under consideration for reintroduction of black-footed ferrets.

In contrast, the No-Action Alternative (Alternative A) would prevent impacts to a variety of resources. However, the No-Action Alternative would result in potentially significant impacts of its own, and would not meet the purpose and need for the project.

In these circumstances, SEA concludes that either of the Extension Alternatives would have significant environmental impacts. However, significant impacts from the construction and operation of the alternatives would generally either be similar between Alternatives B and C or be less for Alternative C. As a result, if the Board decides to give final approval to the PRB

Extension Project, Alternative C would be the environmentally preferred Alternative. This conclusion is consistent with the USFS position that if the project is approved, Alternative C represents the USFS preferred alternative.[48]

3.3.2 ALTERNATIVE ROUTE VARIATIONS

Several alternative route variations for portions of Alternatives B and C have been developed and analyzed as part of this EIS process to respond to engineering and environmental issues. These short variations are located in the Spring Creek and Hay Canyon areas and to access the Black Thunder and North Antelope coal mines. SEA's final conclusions on these variations are discussed below.

3.3.2.1 Spring Creek and Phiney Flat Alternative Route Variations in South Dakota

In the Draft EIS, SEA concluded that the Spring Creek Segment (Figure 3-23)would have significant impacts to water resources, wetlands, and vegetation and that the Phiney Flat Alternative (Figure 3-23) would largely avoid these impacts. SEA stated that the Phiney Flat Alternative would potentially have substantially greater impacts to paleontological resources, based on its alignment through formations known to have a higher potential for containing significant fossil resources. The Spring Creek Segment would also have some potentially significant impacts to paleontological resources. As the Phiney Flat Alternative appeared to create fewer impacts which would be more capable of being mitigated than the Spring Creek Alternative, SEA preliminarily determined that the Phiney Flat Alternative would be environmentally preferable to the Spring Creek Segment. Commenters, particularly the State of South Dakota, generally supported SEA's determination.

SEA also received comments from the Native American Tribes expressing concern for archaeological resources in the Spring Creek and Phiney Flat areas. In the Draft EIS, SEA determined that both the Spring Creek and Phiney Flat alignments had a high potential for encountering archaeological resources. Neither of these alignments was surveyed for cultural resources, as discussed previously in Section 3.2.6. However, based on the results of the areas that were surveyed, it appears that Spring Creek has a greater potential to contain not only more sites, but more significant sites as well. This is primarily due to the Spring Creek Segment's location within and along the Spring Creek drainage. In contrast, the Phiney Flat Segment is

[48] USFS explained in a letter dated February 14, 2000, if the Board determines new rail line is in the national interest, then USFS would consider Alternative C as the preferred alternative, with some modifications. Otherwise, USFS would prefer Alternative A, No-Action.

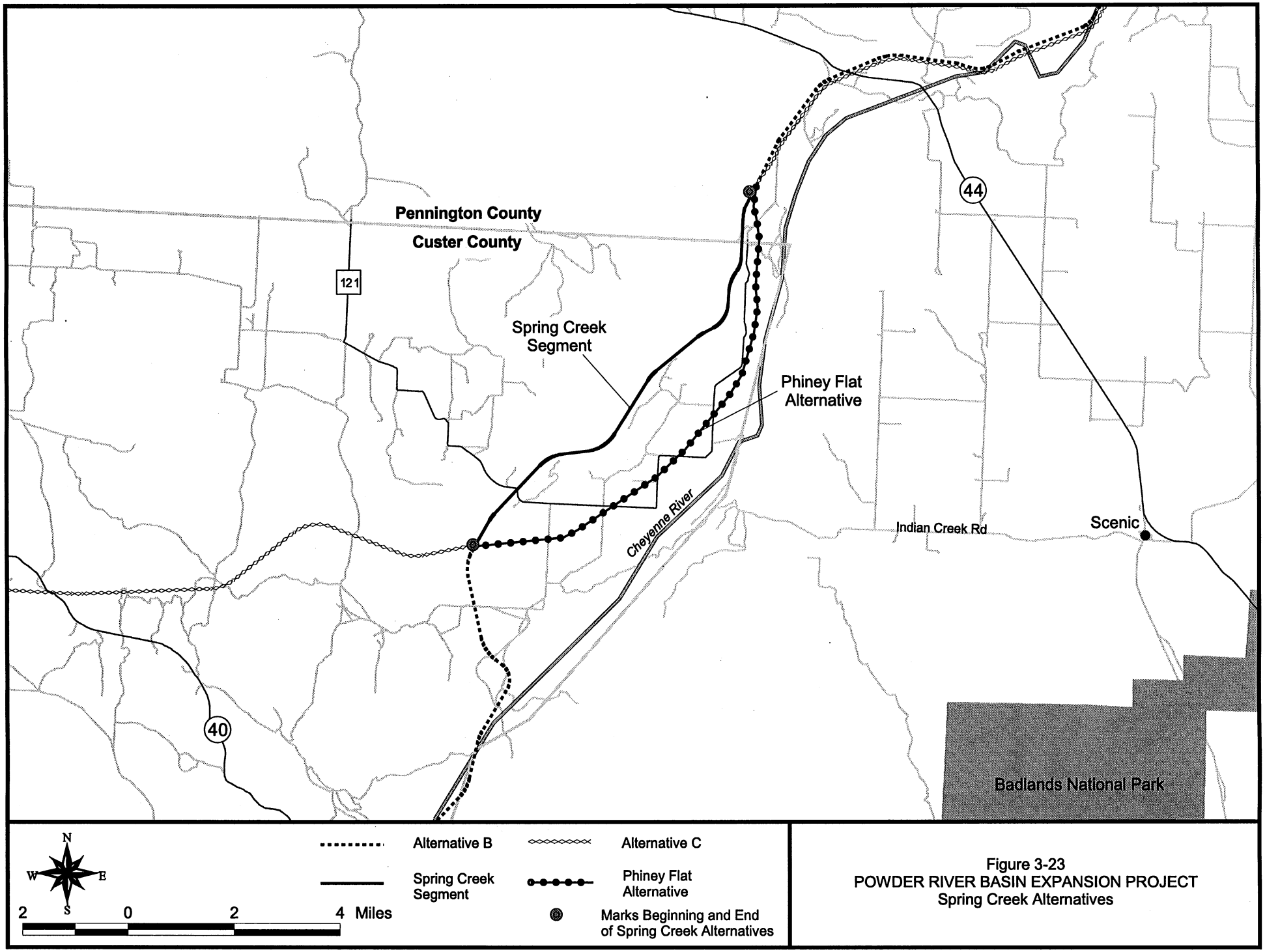

Figure 3-23
POWDER RIVER BASIN EXPANSION PROJECT
Spring Creek Alternatives

mainly located outside of any significant drainages and therefore would be less likely to contain cultural resources sites. Additionally, the Phiney Flat area is relatively open and flat, providing potential opportunities to shift the alignment slightly to avoid a significant cultural site if one were to be identified within the proposed right-of-way.

For all of these reasons, SEA believes the Phiney Flat Alternative would be the environmentally preferred construction alternative for the Spring Creek area.

3.3.2.2 Hay Canyon Segment, Oral Segment, and WG Divide Alternative Route Variations in South Dakota

In the Draft EIS, SEA identified and evaluated three alternative alignment variations for the Hay Canyon area (Figure 3-24). Originally, the Oral Segment, which generally ran along the Cheyenne River and utilized a portion of DM&E's existing rail line between Oral and Smithwick, South Dakota, had been included as part of Alternative B. The Hay Canyon Segment, which generally extended along Hay Canyon, was developed as part of Alternative C as part of an overall attempt to move the proposed rail line away from the Cheyenne River. It was then determined that both would have potentially significant impacts on wetlands and riparian habitats which could be difficult to mitigate effectively. Therefore, a third variation, the WG Divide Alternative, was developed to provide an alignment for evaluation that would minimize impacts to these riparian and wetland areas. However, the WG Divide Alternative would impact private lands within the Angostura Irrigation District and associated facilities administered by the Bureau of Reclamation (Reclamation). Reclamation expressed concerns to SEA that railroad construction and operation under the WG Divide Alternative could have significant impacts to land use, irrigation facilities, and economics within the Angostura Irrigation District. In these circumstances, SEA requested additional comment from agencies and the public to assist in identifying an environmentally preferable extension alternative. SEA indicated that if an environmentally preferable extension alternative could be selected, it would be identified in the Final EIS.

Several agencies submitted comments on the Hay Canyon area route variations. The USFWS indicated, as it had previously, that it preferred the WG Divide Alternative due to avoiding sensitive wetlands and riparian areas along the Cheyenne River and Hay Canyon. The State of South Dakota expressed similar views. Reclamation requested additional analysis of the potential economic impacts associated with construction of new rail facilities across irrigated lands and noted that if the project is approved and the repayment contract and facilities at Angostura are affected, appropriate mitigation would be necessary. SEA also received comments

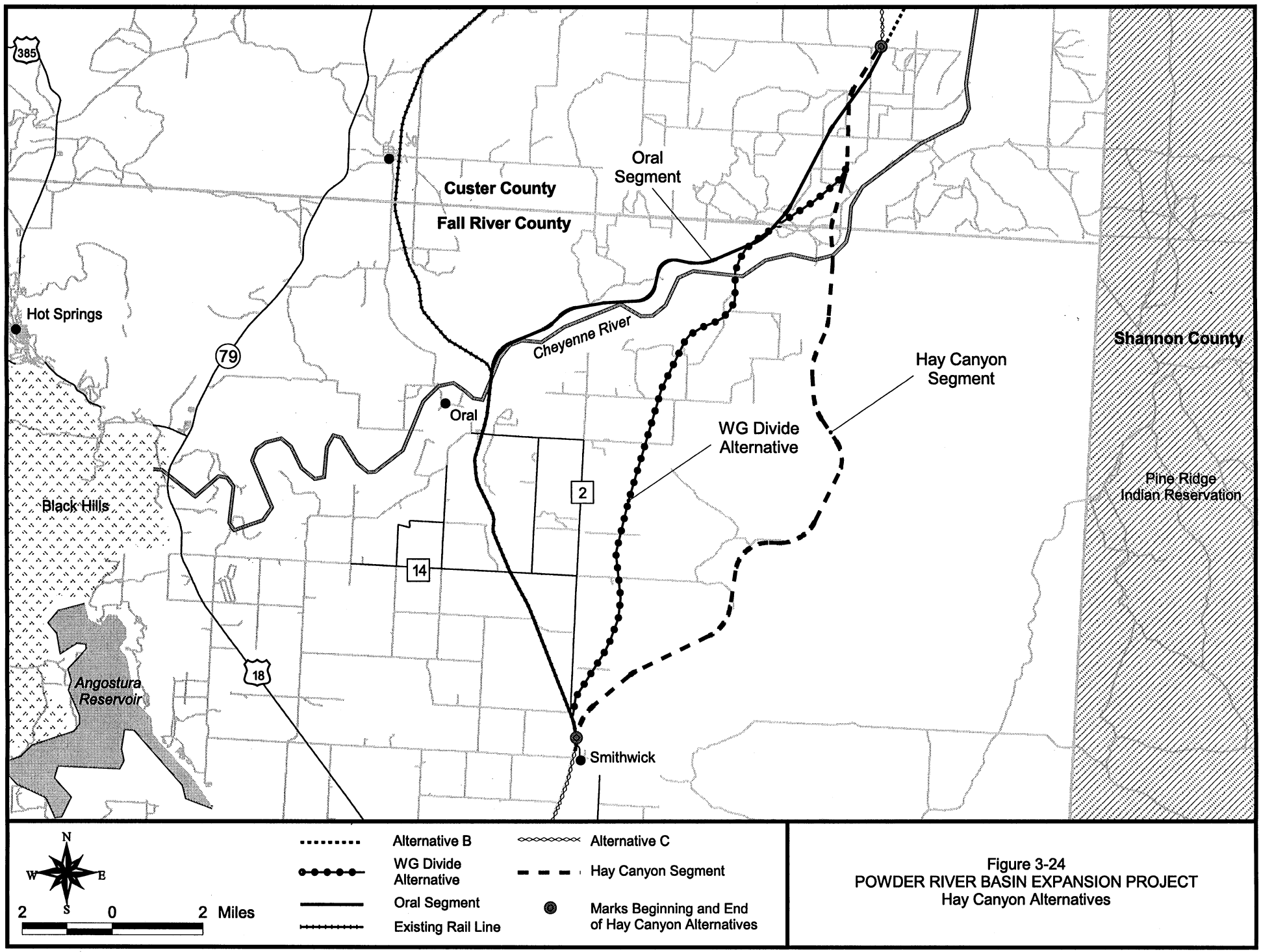

Figure 3-24
POWDER RIVER BASIN EXPANSION PROJECT
Hay Canyon Alternatives

regarding the project's potential impact to waters classified as impaired under the Clean Water Act, Section 303(d).

Based on these comments, SEA conducted additional analysis of the Hay Canyon area alternatives. Additionally, SEA used the results of cultural resource surveys to evaluate the three route variations for their potential to encounter cultural resources.

In the Draft EIS, SEA determined that the Oral Segment would affect 4.5 miles (218.2 acres) of cropland, including 1.5 miles (72.7 acres) of irrigated land, and 13.9 miles (673.9 acres) of rangeland. The Hay Canyon Segment would cross 1.8 miles of cropland (87.3 acres), all of which is likely irrigated, and 14.6 miles (707.9 acres) of rangeland. WG Divide Alternative would cross approximately 6.3 miles (305.5 acres) of cropland, including 5.8 miles (281.2 acres) of irrigated land, and 9.0 miles (436.4 acres) of rangeland.

Subsequent to issuance of the Draft EIS, Reclamation conducted additional review of potential land impacted by the proposed routing variations. Reclamation determined that the WG Divide Alternative could impact up to 437 acres of lands associated with the Angostura Project and Irrigation District. Therefore, SEA has revised its acreage impacts in this Final EIS to be 437 acres of irrigated lands for the WG Divide Alternative.

In preparing this Final EIS, SEA consulted with Reclamation to determine the potential economic losses that would be associated with conversion of agricultural lands to rail line right-of-way. SEA determined that rangeland provides $17 of annual income per acre and that dryland farmland provides $116 per acre. SEA also determined, in consultation with Reclamation, that irrigated lands would generate approximately $227 per acre in crop revenue and an additional $150 in livestock revenue, totaling $372 per acre of annual revenue. Based on these annual revenues, SEA has calculated the potential lost annual revenue for each Hay Canyon alternative. These economic impacts are presented in Table 3-6.

Table 3-6
Value of Revenue from Agricultural Land - Oral Segment, Hay Canyon Segment, and WG Divide Routing Alternative

Alternative	Acres Dry-land Crops	Annual Revenue Lost	Acres of Irrigated Land	Annual Revenue Lost	Acres of Rangeland	Annual Revenue Lost	Total Annual Revenue Lost
Oral Segment	145.5	$16,878	72.7	$27,044	673.9	$11,456	$55,378
Hay Canyon	0	0	87.3	$32,476	707.9	$12,034	$44,510
WG Divide	0	0	437.0	$162,564	436.4	$7,419	$169,983

Based on SEA's further analysis, it appears the WG Divide Alternative would have the greatest economic impact to annual farm revenues, approximately $169,983. While these revenue losses may be significant to individual farmers, overall, they are insignificant compared to the millions of dollars in construction earnings, sales and use taxes, and employment income expected to be generated by this project in Fall River and Custer Counties. Additionally, farmers and ranchers would be compensated for the lost value of their properties, which can be expected to include consideration of revenue losses due to land converted to rail line right-of-way.

However, the loss of irrigated lands and associated revenues associated with the WG Divide could impact the ability of the Angostura Irrigation District and its members to fund the $200,000 annual District budget, as well as payments of approximately $26,000 to Reclamation for water service and the annual project construction repayment. Additionally, removal of lands from irrigation could result in remaining water users paying a higher price for water in order to generate sufficient funds for the District to cover its costs and fund payments to Reclamation.

In its comments on the Draft EIS, Reclamation expressed concern for these issues and indicated that approval of the WG Divide Alternative would require implementation of appropriate mitigation to protect Angostura facilities and maintain the economic and financial viability of the District. SEA is aware that Reclamation and DM&E have developed a Memorandum of Agreement (MOA) which would become effective as part of any permit by Reclamation for a routing alternative, particularly WG Divide, that would cross Reclamation and Irrigation District lands (See Appendix E). This MOA is designed to ensure that Reclamation's concerns are appropriately addressed, and SEA is recommending that the Board impose a

condition requiring DM&E to comply with the MOA, if the WG Divide Alternative is approved and constructed.

As part of its additional analysis, SEA also determined that areas of the Cheyenne River are listed as impaired by the State of South Dakota, under the Clean Water Act, Section 303(d). All of the Hay Canyon Alternatives would cross the Cheyenne River. However, none of them would cross near any location where the river is currently considered to be impaired.

SEA received comments from Native American Tribes expressing concern for cultural resources potentially found along the Hay Canyon Alternatives. None of the Hay Canyon Alternatives has been surveyed for cultural resources. Based on the results of the cultural resource surveys that have been conducted in South Dakota, SEA reviewed the alignments of the Hay Canyon Alternatives to determine their potential to contain cultural resources sites. SEA determined that the Oral Segment has the greatest potential to contain many and potentially significant cultural sites, followed by the Hay Canyon Segment. This is largely due to these two alignments generally being located along an historic water source. The WG Divide Alternative, while having some potential to contain cultural sites, is the least likely to be impacted. The WG Divide Alternative does not follow any particular drainage. As much of the area along the alignment is cropland, any cultural sites found in these areas would likely have been disturbed or destroyed through normal agricultural practices.

In order to identify an environmentally preferred routing alternative, SEA has looked again at the potential impacts of the three alternatives, and the degree to which these impacts could be reduced by mitigation efforts. SEA focused on water resources, riparian areas, wetlands, socioeconomics, and cultural resources in reaching its conclusion.

SEA has determined that, of the three alternatives, the Oral Segment and Hay Canyon Segments would have potentially significant impacts to water resources (including the Cheyenne River and Hay Canyon stream), riparian areas, wetlands, and cultural resources. Moreover, these significant impacts would be difficult to mitigate.

In contrast, the WG Divide Alternative would have substantially less impact to water resources, riparian areas, wetlands, and cultural resources, but would result in thousands of dollars in agricultural revenue losses each year. These losses, while potentially significant to individual farmers and ranchers, would be much less than taxes and salaries paid by DM&E as part of construction and operation of the proposed project. Additionally, the costs to mitigate the wetlands impacts of the Oral and Hay Canyon Segments could be several hundred thousand dollars more than for the WG Divide Alternative, and the riparian impacts could not be effectively

mitigated. Finally, Reclamation and DM&E have developed an MOA that would be implemented as part of any permit issued by Reclamation for impacts to irrigation facilities and irrigated lands.

Because it now appears that significant impacts to irrigated lands associated with the WG Alternative can be effectively mitigated, SEA has determined that the WG Divide Alternative is the environmentally preferred route variation.

3.3.2.3 Black Thunder Mine Loop Alternative Route Variations in Wyoming

SEA indicated in the Draft EIS that two alternatives were evaluated for accessing the Black Thunder coal mine, Black Thunder North Mine Loop and Black Thunder South Mine Loop (Figure 3-25). SEA noted that the Black Thunder South Mine Loop would have greater impacts to safety, geological hazards, soils, paleontological resources, land use, Federal lands, surface waters, wetlands, vegetation, wildlife (except to raptors), transportation, cultural resources, and aesthetics. The Black Thunder North Mine Loop would have greater, albeit minimal, impacts to Federal grazing pastures, state lands, and raptor nests. Based on its detailed evaluation in the Draft EIS, SEA concluded that the Black Thunder North Mine Loop was the environmentally preferred route variation.

SEA received no comments on its analysis or conclusions concerning the Black Thunder Mine Loop alternatives. Therefore, SEA reaffirms its conclusion in the Draft EIS that the Black Thunder North Mine Loop is the environmentally preferred route variation.

3.3.2.4 North Antelope Mine Loop Alternative Route Variations in Wyoming

SEA evaluated two route variations in the Draft EIS to access the North Antelope coal mine, the North Antelope East Mine Loop and North Antelope West Mine Loop (Figure 3-26). SEA concluded that neither of these alternatives would have significant environmental impacts. Impacts from both alternatives would be minimal or could be effectively mitigated to minimal levels. SEA determined that the West Mine Loop would have greater impacts to safety, geological hazards, soils, paleontological resources, land use, surface waters, wildlife, threatened and endangered species habitat, and transportation. The East Mine Loop would have greater impacts on soils with an erosion hazard, number of Federal grazing pastures crossed, and wetlands. Because the East Mine Loop would have fewer impacts on a greater number of resources, all of which would be minimal, SEA identified the North Antelope East Mine Loop as the environmentally preferred route variation.

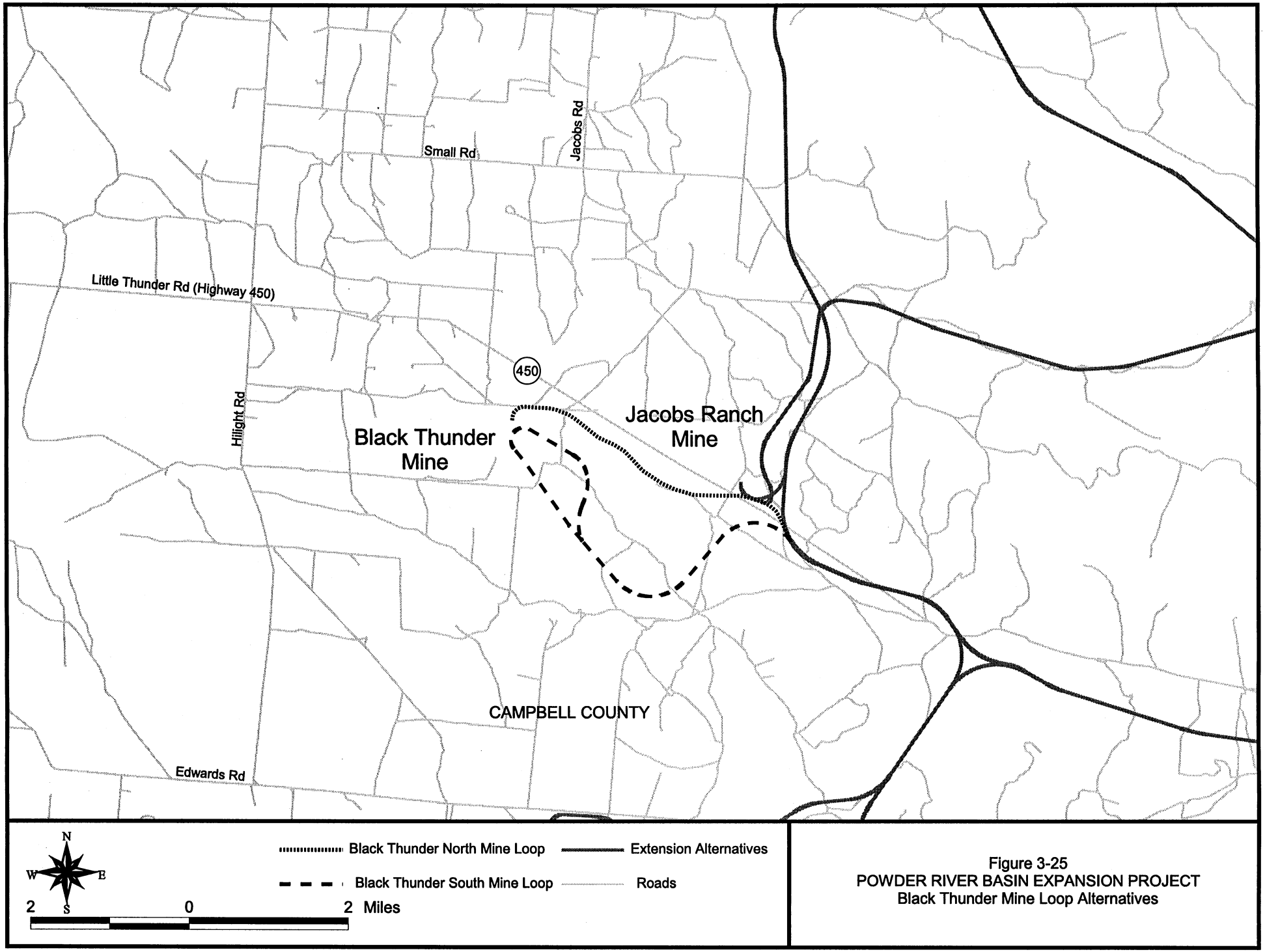

Figure 3-25
POWDER RIVER BASIN EXPANSION PROJECT
Black Thunder Mine Loop Alternatives

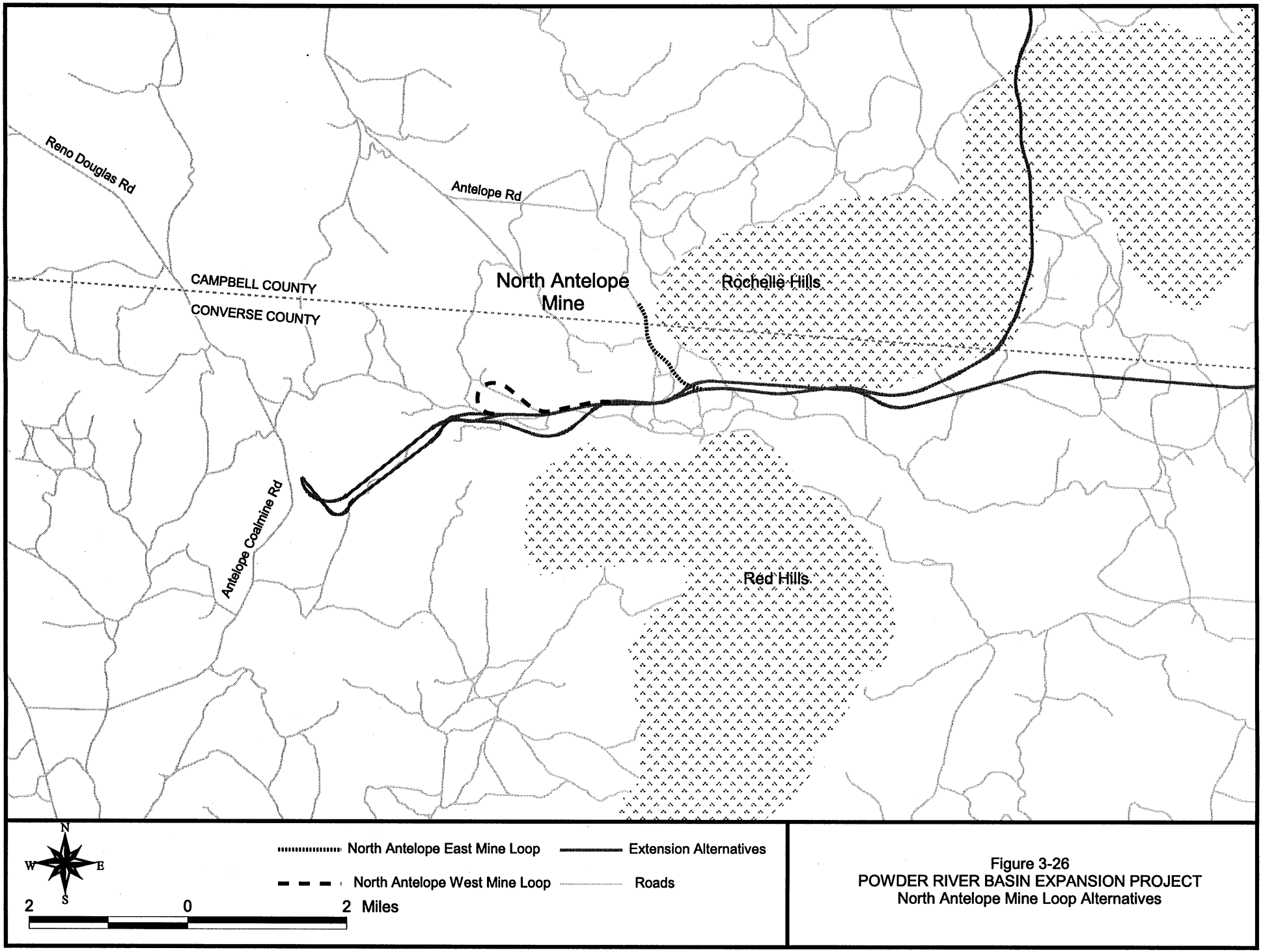

Figure 3-26
POWDER RIVER BASIN EXPANSION PROJECT
North Antelope Mine Loop Alternatives

SEA received no comments on its analysis or conclusions and reaffirms here that the North Antelope East Mine Loop is the environmentally preferred route variation.

3.3.2.5 Conclusion

SEA conducted an extensive and detailed evaluation of a variety of potential alignments to extend DM&E's existing system into the PRB. SEA evaluated the impacts of each alternative on numerous human and natural resources, including safety, transportation, geology, soils, paleontological resources, land use, water resources, wetlands, vegetation, wildlife, threatened and endangered species, cultural resources, noise and vibration, air quality, socioeconomics, and environmental justice. Based on all the information and analysis conducted to-date, SEA has determined that, should the Board decide to approve the proposed project, it appears that, with SEA's recommended mitigation, Alternative C combined with the Phiney Flat Alternative, WG Divide Alternative, Black Thunder North Mine Loop, and North Antelope East Mine Loop represents the environmentally preferable alternative (Figure 3-27).

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